Physics
Reaction Time

Name_____

You and a friend will need a meter stick and this paper. One of you holds the ruler vertically from the 100 cm end, while the other holds their fingers around but not touching the meter stick at 50 cm. The first person should gradually release the ruler so that even they are unsure of when the stick will start to fall toward the floor. As soon as the second person is aware of the motion of the stick, they should grab it. Make a note of how far the stick fell. If you held your fingers at 50 cm, and grabbed it at 64 cm, the fallen distance would be 14 cm or 0.14 m. Do this ten times, for each of you, and write your own fall distances below: Be sure to use meters and not centimeters. i.e. 14 cm = 0.14 m, 8 cm = 0.08 m.

Fall distances in **meters**:

1	2	3	4	5	6	7	8	9	10

1. Express your fall distance in meters as a lowest, an average, and a highest value:

Lowest: _____ Average: _____ Highest: _____

2. If there is a zero initial velocity, one of our kinematic equations yields:

$X = \frac{1}{2}at^2$, Solving for t: $t = \sqrt{\frac{2X}{a}}$, Putting in 9.8 for acceleration: $t = \sqrt{\frac{2X}{9.8}}$

3. Use the formula to calculate the reaction time from the fall distances. You will use the lowest, average and highest fall distances. **Show your work in the space below the line**.

Smallest possible Time: _____ Best Guess Time: _____ Largest possible Time: _____

4. Say you were driving home from night skiing on Mt Hood and you happened upon a stretch of road that was washed out. Would you be able to hit the brakes as quickly as you grabbed the meter stick in this lab? Give me at least two reasons why or why not. (I can think of four)